



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,610	10/24/2003	Izhak Baharav	10991144-5	8820

7590 10/19/2004  
HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, CO 80527-2400

EXAMINER

HESS, DANIEL A

ART UNIT PAPER NUMBER

2876

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/692,610

Applicant(s)

BAHARAV ET AL.

Examiner

Daniel A Hess

Art Unit

2876

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 July 2004.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 15-34 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 25-34 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/14/04.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Remarks*

This is in response to applicant's 7/14/04 amendment. Amendments to the specification are noted and considered acceptable.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15-17, 20, 21, 23-25 and 31-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Tow (US 5,315,098), of record in applicant's information disclosure of 7/14/2004, and also in the first Office Action. Tow teaches a halftone imaging system having all of the elements and means as recited in claims 15-17, 20, 21, 23-25 and 31-34. For example, Tow teaches the following:

Re claim 15:

The first part of the claim,

A method for generating a visually significant barcode comprising: receiving an M x N pixel image, wherein M and N are positive integers; receiving a message having a plurality of symbols ; partitioning at least a portion of an MXN pixel image into a plurality of KxK image matrices, wherein K is a positive integer; and converting at least one of the KxK image matrices to a respective KxK barcode matrix corresponding to a symbol in the message and contained in one of multiple predetermined barcode matrix sets

Art Unit: 2876

is similar to the original claim 15. Tow is a similar halftone data-embedding system to Curry, wherein (see especially figure 1 and figures 3a-3c) an image is divided into smaller  $K \times K$  matrices; here  $k = 5$ , whose pattern depends on the data stream being encoded. The second part of the claim,

selected based on pixel values in the  $K \times K$  image matrix being converted, wherein each barcode matrix set includes a respective barcode matrix for each possible symbol in the message, and barcode matrices in different sets encoding a common message symbol have different respective spatial patterns of dots selected from a set of different colored dots.

is also present: 'the sizes of these halftone dot patterns are modulated in accordance with the grayscale data sample values that are provided to define the image...' (column 3, lines 49-53). It is clear (see especially figure 2) that in changing the sizes of halftone patterns to account for variations in the tone of the image being converted, one must clearly adjust the dot pattern. In figure 2, which is a  $5 \times 5$  array of pixels (column 3, line 51), six pixels are 'on.' To darken this  $K \times K$  matrix, one increases the size of the halftone pattern, clearly by adding pixels to it. This will indeed change the spatial pattern of dots, as recited in claim 1. As for the use of different colored dots, it is clear (column 1, lines 19-20) that the instant invention is applicable to dual tone color separations. Thus for example, darkening can create a completely new set of matrices, similar to the set shown in figure 3, but with one or more additional pixels activated.

Re claim 16: A color level image has been discussed above; grayscale (column 2, lines 49-51) are also possible.

Re claim 17: Grayscale (column 2, lines 49-51) normally has greater than two different tones spanning the range of white to black.

Art Unit: 2876

Re claim 20: Tow makes machine readability evident in the title and throughout the document. It is clear throughout the document that decoding involves partition into the individual halftone images (i.e. the sub-images) and comparing it with a set of possible halftone images to recreate the encoded message: This is simply the reverse of the encoding process shown in figures 1 and 3.

Re claim 21: Locating each individual halftone image is clearly a necessary step before machine-deciphering it.

Re claim 23: Although not explicitly stated, Tow makes clear that by adjusting the tone, one can create additional sets ('groups') by changing the tone of the matrix, which will involve adding or subtracting activated pixels within the matrix and reproducing the various rotations. See the final paragraph of the discussion re claim 15, above.

Re claim 24: See column 2, lines 49-51.

Re claim 25: This mapping has been well illustrated in figures 1 and 3, as well as throughout Tow.

Re claim 31: Bright and dark pixels are evident in figure 3.

Re claim 32: Multi-tones are evident in figure 3.

Re claim 33: Images may at the pixel level be black and white (column 1, line 18).

Re claim 34: See figures 2 and 3: Each dot is a square pixel area.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tow in view of Curry (of record in prior action).

Tow fails to explicitly recite cluster dithering.

Curry shows (see figure 4) cluster dithering in a halftoning application; one would have been motivated to do this to convincingly reproduce the original image.

Claims 18, 22, 27, 28, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tow as applied to claims 15 and 20 respectively, above, in view of Rhoads (US 6,345,104).

Re claims 18, 22, 27: Tow fails to teach or suggest the use of one or more fiducial marks to aid the proper machine decoding of the message embedded in the image.

Rhoads teaches (figures 7a and 7b; column 7, line 19 to column 8, line 26) the use of calibration tiles intermixed with tiles containing data an overall watermark to enable calibration for a more-precise and less error-prone read.

Art Unit: 2876

In view of Rhoads' teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the calibration cells (i.e. fiducial marks) of Rhoads in the teachings of Tow to achieve a decode that is more accurate by having 'test data' for calibration prior to decoding the real message.

Re claim 28: Corner areas would be an obvious choice for a fiducial mark; legends on maps are typically in a corner.

Re claim 29: For a mark to be detectable against a background, there must be sufficient contrast between it and its background.

Claims 26, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tow as applied to claims 25 above, in view of the applicant's own prior art admission.

Re claim 26: In particular, the applicant recites in his own specification, the following (instant specification, page 14, lines 18-20): In addition, the visually significant bar code system of the present invention can employ various error correcting codes, **which are generally well known to those of ordinary skill in the art**, for reliable automated retrieval of bar codes. The examiner concurs that things such as 'checksums' have long been used to ensure accurate data encoding and decoding.

Re claim 30: It is often the case the when data is placed in a region where space is limited that the data is compressed. Examples include compression of data into .zip files for conveyance on the Internet and .jpeg files for lower size storage. The motivation in such cases is to get more data into a limited area; Tow's system can certainly carry only a limited amount of data (equal to the number of  $K \times K$  matrices).

### ***Response to Arguments***

The crux of the applicant's argument with respect to claim 15 seems to be that the spatial pattern of dots in Curry does not change (see for example page 8 of applicant's response) and only the thickness changes. The examiner respectfully disagrees and notes that indeed the dot pattern must change in order for the thickness to change, if dots are seen at the resolution of pixels. The examiner has employed Tow (US 5,315,098) herein, because Tow illustrates individual pixels, which makes it more abundantly clear (see especially figure 2) that in changing the sizes of halftone patterns to account for variations in the tone of the image being converted, one must clearly adjust the dot pattern. In figure 2, which is a 5x5 array of pixels (column 3, line 51), six pixels are 'on.' To darken this KxK matrix, one increases the size of the halftone pattern, clearly by adding pixels to it. This will indeed change the spatial pattern of dots, as recited in claim 1.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not




Art Unit: 2876

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel A Hess whose telephone number is (571) 272-2392. The examiner can normally be reached on 8:00 AM - 5:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G Lee can be reached on (571) 272-2398. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
DH

**DANIEL STCYR  
PRIMARY EXAMINER**  
